LEBOEUF, LAMB, GREENE & MACRAE LLP

NEW YORK
WASHINGTON, D.C.
ALBANY
BOSTON
CHICAGO
HARTFORD
HOUSTON
JACKSONVILLE
LOS ANGELES
PITTSBURGH
SAN FRANCISCO

1875 CONNECTICUT AVE., N.W.
SUITE 1200
WASHINGTON, D.C. 20009-5728
(202) 986-8000
FACSIMILE: (202) 986-8102

E-MAIL ADDRESS: BRETT.SNYDER@LLGM.COM
WRITER'S DIRECT DIAL: (202) 986-8008
WRITER'S DIRECT FAX: (202) 956-3217

LONDON
A MULTINATIONAL PARTNERSHIP
PARIS
BRUSSELS
JOHANNESBURG
(PTY) LTD.
MOSCOW
RIYADH
AFFILIATED OFFICE
BISHKEK
ALMATY
BEIJING

August 11, 2006

BY ELECTRONIC FILING

Magalie Roman Salas, Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

Re: Broadwater Energy LLC, Docket No. CP06-54-000
Broadwater Pipeline LLC, Docket Nos. CP06-55-000 & CP06-56-000

Dear Ms. Salas:

Enclosed for filing in the referenced proceedings is a copy of correspondence from Broadwater Energy LLC and Broadwater Pipeline LLC to the Environmental Protection Agency.

Please do not hesitate to contact me with any questions regarding this submission.

Respectfully submitted,

/s/ Brett A. Snyder

Brett A. Snyder

Counsel to Broadwater Energy LLC and Broadwater Pipeline LLC

Enclosure

cc: James Martin, FERC
Coordinating Agencies
ENTRIX, Inc.
Roger Stebbing and Associates

LEBOEUF, LAMB, GREENE & MACRAE LLP

NEW YORK
WASHINGTON, D.C.
ALBANY
BOSTON
CHICAGO
HARTFORD
HOUSTON
JACKSONVILLE
LOS ANGELES
PITTSBURGH
SAN FRANCISCO

GOODWIN SQUARE
225 ASYLUM STREET, 13TH FLOOR
HARTFORD, CT 06103
(860) 293-3500
FACSIMILE: (860) 293-3555

EMAIL ADDRESS: JTHOMPSO@LLGM.COM
WRITER'S DIRECT DIAL: (860) 293-3507
WRITER'S DIRECT FAX: (860) 241-1307

LONDON
A MULTINATIONAL PARTNERSHIP
PARIS
BRUSSELS
JOHANNESBURG
(PTY) LTD.
MOSCOW
RIYADH
AFFILIATED OFFICE
BISHKEK
ALMATY
BEIJING

August 2, 2006

BY ELECTRONIC AND FIRST CLASS MAIL

Ms. Racqueline Shelton
Group Leader
New Source Review Group C504-03
U.S. Environmental Protection Agency
Research Triangle Park, NC 27711

Re: Broadwater Project - Request for Meeting to Discuss PSD Issues

Dear Ms. Shelton:

I write on behalf of Broadwater Energy, LLC and Broadwater Pipeline, LLC (collectively, "Broadwater") to request a meeting with the U.S. Environmental Protection Agency's ("EPA") New Source Review Group ("NSRG") and EPA Region 2 to discuss "dockside" vessel emission issues related to Broadwater's proposal to construct and operate a liquefied natural gas ("LNG") terminal which will be permanently moored in the waters of Long Island Sound (the "Project").

I understand that EPA Region 2 is coordinating with the NSRG to prepare the Prevention of Significant Deterioration ("PSD") applicability determination for the Project and that the NSRG will decide whether EPA's PSD determination will include emissions from LNG vessels that occur during cargo offloading activities. EPA Region 2 staff have said in recent conversations with Broadwater representatives that these emissions will be included in the PSD applicability determination for the Project. For the reasons set forth in Broadwater's May 3, 2006 response to EPA Region 2 (copy attached hereto), Broadwater does not believe that these emissions can be included as part of the PSD "stationary source." As a result, a meeting between the parties prior to the issuance of EPA's applicability determination is warranted.

I will contact you in the near future to coordinate dates for this meeting. In the meantime, please do not hesitate to call me if you have any questions.

Sincerely,

James A. Thompson, Jr.

cc: Steven Riva (EPA Region 2)
Jim Martin (FERC)
Sandra Barnett (Broadwater)
Kristine Delkus (Broadwater)
Robert J. Alessi (LeBoeuf, Lamb, Greene & MacRae)

HT 262657.1

LEBOEUF, LAMB, GREENE & MACRAE LLP

NEW YORK
WASHINGTON, D.C.
ALBANY
BOSTON
CHICAGO
HARTFORD
HOUSTON
JACKSONVILLE
LOS ANGELES
PITTSBURGH
SAN FRANCISCO

GOODWIN SQUARE
225 ASYLUM STREET, 13TH FLOOR
HARTFORD, CT 06103
(860) 293-3500
FACSIMILE: (860) 293-3555

E-MAIL ADDRESS: JTHOMPSO@LLGM.COM
WRITER'S DIRECT DIAL: (860) 293-3507
WRITER'S DIRECT FAX: (860) 241-1307

LONDON
A MULTINATIONAL PARTNERSHIP
PARIS
BRUSSELS
JOHANNESBURG
(PTY) LTD.
MOSCOW
RIYADH
AFFILIATED OFFICE
BISHKEK
ALMATY
BEIJING

May 3, 2006

BY ELECTRONIC AND FIRST CLASS MAIL

Steven C. Riva, Chief
Permitting Section
Air Programs Branch
U.S. Environmental Protection Agency, Region 2
290 Broadway
New York, NY 10007-1866

Re: Broadwater Energy Project – Responses to EPA's March 9, 2006 Letter

Dear Mr. Riva:

Attached hereto are the responses of Broadwater Energy LLC and Broadwater Pipelines LLC ("Broadwater Energy") to the U.S. Environmental Protection Agency's March 9, 2006 letter providing comments on Resource Report No. 9 (addressing air and noise quality) for the Broadwater Energy Project.

Please do not hesitate to contact me or Sandra Barnett at 403-920-7776 if you have any questions concerning the attached responses.

Respectfully submitted,

James A. Thompson, Jr.
Counsel for Broadwater Energy

Attachments

cc: Sandra Barnett (Broadwater Energy)
Kristine Delkus (Broadwater Energy)
Robert J. Alessi (LLGM)

BROADWATER

1. The various Standard Industrial Classification (SIC) Codes that will be applicable for the proposed facility (floating storage and regasification unit [FSRU] and vessels) and for each group of polluting emitting equipment that has a specific function should be listed in the report.

RESPONSE

The following response identifies the primary SIC codes applicable to the FSRU, the liquefied natural gas carriers ("LNGCs"), and each group of pollutant emitting equipment that has a specific function on the FSRU and the LNGCs:

Equipment	SIC Code	Explanation	PSD Threshold
FSRU	4922 (Natural Gas Transmission)	The primary purpose of the FSRU is to store and regasify LNG and deliver natural gas	250 TPY
Process Heaters (Four with one backup)	4922 (Natural Gas Transmission)	Processing equipment on the FSRU	250 TPY/100 TPY (Fossil fuel boilers > 250 MMBTU/hr)
Turbines (Two with one backup)	4922 (Natural Gas Transmission)	Power generation equipment on the FSRU	250 TPY/100 TPY (Fossil fuel steam electric plants > 250 MMBTU/hr)
Emergency Diesel Generators (Three)	4922 (Natural Gas Transmission)	Power generation equipment on the FSRU	250 TPY
Diesel Firewater Pumps (Two)	4922 (Natural Gas Transmission)	Safety equipment on the FSRU	250 TPY
LNGCs	4412 (Deep Sea Foreign Transportation of Freight)	The primary purpose of the LNGCs is to transport and deliver LNG	N/A
Boilers (for certain LNGCs)	4412 (Deep Sea Foreign Transportation of Freight)	Propulsion and power generation equipment on the LNGCs	N/A[1]
Diesel Engines (for certain LNGCs)	4412 (Deep Sea Foreign Transportation of Freight)	Propulsion and power generation equipment on the LNGCs	N/A[2]

[1] If assumed to be part of the "stationary source" then 250 TPY/100 TPY (Fossil Fuel Boilers > 250 MMBTU/hr).
[2] If assumed to be part of the "stationary source" then 250 TPY.

BROADWATER

2. Consistent with the guidance provided in the October 28, 2003 EPA letter from Charles J. Sheehan, Regional Counsel, EPA Region 6 to Mr. Michael Cathey and Ms. Diana Dutton, from El Paso Energy Bridge Gulf of Mexico, L.L.C. and Akin, Gump, Strauss, Hauer & Feld, L.L.P., respectively, EPA Region 2, in coordination with our OAQPS office, has determined that certain emissions from the vessels should be counted toward the PTE (potential to emit) of the FSRU. More specifically, for PSD applicability purposes, the vessel emissions related to off-loading and on-board processing of the LNG count towards the PTE of the FSRU and that emissions related to hotelling and propulsion of the vessel do not count towards the PTE of the FSRU.

Consequently, the report should contain a detailed breakdown of emissions (with a detailed discussion) quantifying vessel emissions that correspond to the off-loading and on-board processing of the LNG and quantifying vessel emissions that correspond to hotelling and other ship functions while at berth. If there are more than one unit (boiler/diesel engine) producing these emissions, specify these units. The report should also break down the emissions on a unit by unit basis so it is clear which units on the ships are generating the emissions for these various functions. PTE emissions from the FSRU should be recalculated by incorporating the corresponding emissions from the vessels not associated with hotelling.

RESPONSE

Broadwater Energy LLC and Broadwater Pipelines LLC (collectively "Broadwater Energy") have reviewed the October 23, 2003 letter referenced in EPA Region 2's March 9, 2006 letter and respectfully requests that EPA Region 2 reconsider its preliminary determination in light of the discussion provided below. Please note that while Broadwater Energy disagrees with the Region's preliminary determination, to develop a productive dialogue between the parties and facilitate a prompt resolution of this issue, Broadwater Energy has quantified LNGC emissions attributable to the offloading of LNG to the FSRU. These emission calculations demonstrate that the potential to emit ("PTE") of the Project, when including the category of LNGC emissions requested in the Region's March 9th letter, are below "major source" PSD thresholds.

A. Regulatory Framework

Broadwater Energy has evaluated the applicability of EPA's regulations and guidance concerning "stationary sources" in light of the specific configuration of the Broadwater Project ("Project") and the business relationship between Broadwater Energy (the owner/operator of the FSRU) and the owners/operators of the LNGCs that are expected to deliver LNG to the FSRU. Based upon this evaluation, Broadwater Energy does not believe that the LNGCs, when connected to the FSRU, are part of the "stationary source" subject to PSD permitting. For the sole purpose of this analysis, and in accord within the position taken by EPA in its letter to El Paso Energy Bridge, Broadwater Energy has assumed that neither EPA's 1980 "control and proximity" regulations nor its 1982 rulemaking that exempted all vessel emissions (to the extent vacated in Natural Resources Defense Council v. EPA, 725 F.2d 761, 771 (D.C. Cir. 1984)) will

influence the outcome of EPA's determination on this issue. Rather, the definitions in the Clean Air Act and EPA's implementing regulations are assumed to control.

In accordance with EPA's Draft New Source Review Workshop Manual (October 1990) and 40 C.F.R. § 52.21, the threshold requirement to determine whether PSD applies to the Project is to define the "stationary source." A "stationary source" is "any building, structure, facility, or installation which emits or may emit a regulated NSR pollutant." 40 C.F.R. § 52.21(b)(5). "Building, structure, facility, or installation" means all pollutant-emitting activities which:

(1) Belong to the same "Major Group" (i.e., have the same first two digit code) as described in the SIC Manual;

(2) Are located on one or more contiguous or adjacent properties; and

(3) Are under the control of the same person (or persons under common control).

40 C.F.R. § 52.21(b)(6). Under EPA guidance, "support facilities" are "to be considered to be part of the same industrial grouping as that of the primary facility it supports even if the support facility has a different two digit SIC code." See Letter from Robert B. Miller, EPA Region 5 to William Baumann, Wisconsin Department of Natural Resources regarding Oscar Mayer Foods (August 25, 1999) ("Miller Letter"); see also Memorandum from John S. Seitz regarding Major Source Determinations for Military Installations under the Aix Toxics, New Source Review, and Title V Operating Permits Programs of the Clean Air Act (August 2, 1996) ("Seitz Memo").

A. The FSRU and the LNGCs Will Not Be Under Common Ownership or Control

Unlike the El Paso Energy Bridge Project and some other LNG projects under development, the Project will not have a dedicated fleet of LNGCs. In addition, due to the special nature of the El Paso Energy Bridge Project, the LNGCs servicing that project are equipped with regasification capabilities and become the processing and send out facility during discharge operations when stationary at the El Paso Energy Bridge Project.[3]

EPA's determination concerning *common ownership or control* "focuses on who has the power to manage the pollutant-emitting activities of the facilities at issue, including the power to make or veto decisions to implement major emission control measures or to influence production levels and compliance with environmental regulations. See Miller Letter, at 2 citing Seitz Memo.

[3] For the avoidance of doubt, it is important to note that the LNGCs that will service the Broadwater Project will not have onboard regasification capabilities (as is the case for the El Paso Energy Bridge Project and the Neptune Project or Northeast Gateway Project proposed in Boston Harbor). The equipment located on the Broadwater FSRU (i.e., the shell and tube vaporizers) will be used to regasify the LNG.

BROADWATER

Broadwater Energy is a joint venture between TCPL USA LNG, Inc. and Shell Broadwater Holdings, LLC. Broadwater Energy will be the owner/operator of the FSRU. Broadwater Energy will not, however, own the delivered LNG nor own/operate the LNGCs which will deliver the LNG to the FSRU for processing. The LNG delivered to, stored at, and regasified by the FSRU is owned by Shell North America LNG ("SNALNG"). Broadwater Energy does not direct nor exercise management control over the actions of SNALNG.

SNALNG will purchase LNG from other Shell affiliates or third party suppliers. It is unlikely to have any influence over the actual vessels which are used to deliver cargoes to the Broadwater FSRU. In addition, it would be SNALNG (not Broadwater Energy) that potentially could have the ability to dictate the terms of delivery through negotiations. Broadwater Energy will retain the right to reject an LNGC nominated for delivery to the FSRU based on limited criteria, including any physical limitations of the FSRU to accommodate the delivery or the failure of the LNGC to be in compliance with international and domestic requirements/industry standards, safety/security measures adopted by Broadwater Energy, and United States Coast Guard administered laws and regulations.

Broadwater Energy will not own or operate the LNGCs nor will it have the ability to make operational decisions aboard the LNGCs. It is an established maritime practice that operational decisions concerning vessels always remain with the vessel owner/operator. This is true even when vessels are docked at port (and in this instance when the LNGC is docked alongside the FSRU and transferring LNG). Broadwater Energy cannot control nor can it ensure by contract the management of "polluting-emitting activities" on the LNGCs, let alone make or undo decisions made with respect to the implementation of emission control measures or compliance with environmental regulations by the separate companies owning/operating the LNGCs.

The Project is in certain ways analogous to the facts in the Miller Letter in which EPA Region 5 concluded that six power generators that were to be constructed on property owned by Oscar Mayer that would be used to provide backup power for Oscar Mayer's operations (but would be wholly owned by Madison Gas and Electric) were not part of the Oscar Mayer "stationary source" because the six generators at issue were not under "common control." In reaching this conclusion, EPA Region 5 noted that Oscar Mayer had no ownership interest in the generators and that the contract between the parties did not allow Oscar Mayer to control or make decisions regarding the "pollutant-emitting activities" associated with the generators.

Based upon the foregoing, Broadwater Energy respectfully submits that its Project and the LNGCs are not under "common ownership or control" as this phrase has been interpreted in EPA guidance. As a result, the LNGCs are not part of the "stationary source" for the purposes of PSD permitting and should be excluded from further evaluation with respect to this program.

B. The Boilers/Diesel Engines on the LNGCs Are Not Support Facilities to the FSRU and Are Not Part of the Same SIC Major Group

BROADWATER

As noted in Broadwater Energy's response to Question #1, the FSRU (and related equipment) is part of SIC Major Group 49 and the LNGCs (and related equipment) are part of SIC Major Group 44. Broadwater Energy respectfully submits that neither the LNGCs nor the boilers/diesel engines on the LNGCs used to transfer LNG to the FSRU are "support facilities" as that term has been interpreted in EPA guidance. Therefore, the LNGCs and the boilers/diesel engines are not within the same SIC Major Group as the FSRU and are not part of the "stationary source" for the purpose of determining the applicability of PSD requirements.

The factors which must be considered by EPA in making its determination of whether the LNGCs or boilers/diesel engines on the LNGCs are "support facilities" for the FSRU were articulated in the Miller Letter:

> In short, where more than 50% of the output or services provided by one facility is dedicated to another facility that it supports then a support facility relationship is presumed to exist. Even where this 50% test is not met, however, other factors may lead the permitting authority to make a support facility determination. Support facility determinations can depend upon a number of financial, functional, contractual, and/or other legal factors. These include, but are not limited to: (1) the degree to which the supporting activity receives materials or services from the primary activity (which indicates a mutually beneficial arrangement between the primary and secondary activities); (2) the degree to which the primary activity exerts control over the support activity's operations; (3) the nature of any contractual arrangements between the facilities; and (4) the reasons for the presence of the support activity on the same site as the primary activity (e.g., whether the support activity would exist at the site but for the primary activity). Where these criteria indicate a support relationship, permitting authorities may conclude that a support activity contributing more or less than 50% of its output may be classified as a support facility and aggregated with the facility it supports as part of a single source.

When the LNGCs and the boilers/diesel engines on the LNGCs are viewed in light of this guidance, it is clear that a support facility relationship between the boilers/diesel engines on the LNGCs and the FSRU does not exist. The output of the boilers/diesel engines on the LNGCs only will be dedicated to the FSRU when the LNGCs are berthed at the FSRU and are transferring LNG; the output needed from the boilers/diesel engines to transfer the LNG is only a small portion of the total output capability of this equipment. In all other circumstances (e.g., transit, hoteling, etc.) the output of this equipment is dedicated to the LNGCs. In addition, the LNGCs that might service the Project will not be dedicated to the Project and only a limited amount of their overall operation/service time will be devoted to offloading cargo to the FSRU.

The other "financial, functional, contractual and/or other legal" factors that EPA relies on in determining whether a support facility relationship exists also are not present in the context of the Project. As noted, Broadwater Energy, the owner and operator of the FSRU, will have *no* control over the operation of the LNGCs or the boilers/diesel engines on the LNGCs (including "polluting-emitting activities" and decisions made with respect to implementation of emission control measures or compliance with environmental regulations); this control will be exclusive to the vessel owner/operator. Furthermore, since a third party will arrange and contract for the delivery of LNG to the FSRU, Broadwater Energy will not have a contractual relationship with the vessel owners/operators that would allow it to assert "control" over the vessels or the boilers/diesel engines on the vessels.

Finally, the primary reason that the boilers/diesel engines are in close proximity to the FSRU is because they are used to provide propulsion to the LNGCs. While it is true that the LNGCs would not be present at the FSRU "but for" the existence of the FSRU, the primary facility supported by the boilers/diesel engines is the LNGCs and not the FSRU. Similarly, as noted, the Project will not be the primary facility supported by the LNGCs which can service any LNG terminal. Even if the FSRU is assumed to be the "primary" facility supported by the LNGCs or the boilers/diesel engines (and therefore would not be present at the FSRU "but for" the existence of the FSRU), this factor alone does not conclusively establish that the vessel or this equipment is a "support facility." Rather, in evaluating all of the relevant factors noted in the Miller Letter and the Seitz Memo, it is clear that EPA's guidance would not treat an LNGC or the boilers/diesel engines aboard an LNGC as a "support facility" of the Project.

Based upon the foregoing: (1) the FSRU and LNGCs will not be under "common ownership or control"; and (2) the LNGCs and the boilers/diesel engines on the LNGCs are not "support facilities" and are not included within the same SIC Major Group as the FSRU. In the absence of these two conditions, the LNGCs cannot be included in the "stationary source" analysis for the Project. Broadwater Energy therefore requests EPA's concurrence that the emissions attributable to LNGCs when connected to the FSRU for the sole purpose of transferring LNG are not to be included in the PSD analysis for the Project.

C. Breakdown of LNGC Emissions/Emission Estimates

The boilers aboard a steam turbine LNGC produce steam. The combined output from the boilers is split and drives a steam turbine primarily for propulsion and a steam turbine generator to generate electricity. The electricity produced is used for ship functions such as hoteling and operation of cargo loading/unloading equipment. The electricity produced is routed to a switching board which then distributes the electricity to vessel components. Therefore, the combustion source used to produce electricity is also used to propel the vessel.

When an LNGC is docked next to the FSRU during LNG pumping, the full capacity of the boilers is not needed. An LNGC's boiler/steam turbine/electric generation capacity is sized to accommodate propulsion needs on the high seas. When pumping LNG while the vessel is docked to the FSRU, one boiler is on standby and the other boiler is operating at a reduced load

BROADWATER

while providing sufficient steam to spin the turbine generator to produce electricity for the LNG pumps and to accommodate vessel hotel needs.

LNGC emissions associated solely with offloading LNG were determined from the estimated power requirements for pumping. The current LNGC fleet is 100% steam turbine. Beginning in 2011 (the anticipated start date for operations of the Project), some slow speed diesel LNGCs may begin operating in the LNG delivery fleet such that some may be available to call on the FSRU. The LNGC fleet is discussed in more detail in Broadwater's response to EPA question #4.

The emission estimate (Table 1) shows an analysis for a 100% steam turbine vessel scenario and assumes the use of 2.7% sulfur fuel (on average). The annual emission estimate is based on 118 deliveries of LNG to the FSRU. The data used in this table is taken from Table 13 of Appendix B of Resource Report 9; the columns labeled "Annual Emissions – LNG Loading" from Resource Report 9 were refined further to break out emissions due to LNG pumping and hoteling related emissions during the LNG pumping period. See *Attachment A*. As noted in EPA's March 9 letter, the hoteling emissions are not to be included in the PSD applicability analysis.

The PTE for LNG pumping and regasification for the FSRU/vessel combination is shown in Table 2; in addition, emissions from ship hoteling and other ship functions while at berth (including the period while berthed at the FSRU but not unloading LNG) are shown. The comparisons by emission source category to the PSD 100 TPY threshold are shown in Tables 3 and 4. None of the combination of sources exceed a PSD threshold. The PTE for sulfur dioxide ("SO_2") emissions from the FSRU and the 2 boilers onboard a steam turbine LNGC is estimated at 88.1 TPY, 11.9 tons below the PSD threshold of 100 TPY for the fossil fuel boiler source category with combined heat input > 250 MMBtu/hr.

Table 1 – LNG Pumping and FSRU Regasification Emission Analysis – 250 TPY PSD Facility Threshold (all values reflect TPY)

	NOx	VOC	CO	SO_2 (assuming 2.7% S fuel)	PM_{10}	$PM_{2.5}$
LNG Carrier Offloading and FSRU Processing Emissions						
FSRU – Process Heaters (4 with 1 spare)	21	8.4	49	2.5	31	31
FSRU – Gas Turbines (2 with 1 spare)	34	9.4	30	1.6	16	16
FSRU – Other sources (emergency engines)	16	0.5	8	0.0	0.3	0.3
Current Fleet LNG Carrier while Pumping	11	0.2	0.6	84	4	4
Total Operational Process Emissions (PTE)	82	18.5	87.6	88.1	51.3	51.3
Hoteling and Other Ship Function Emissions While at Berth						
LNG Carrier Hoteling while Pumping LNG	7	0.1	0.42	56	3	3
LNG Carrier Non Loading	4	0.1	0.24	32	1.5	1.5

BROADWATER

Period						
Total Annual Operational Non-Permit Emissions	11	0.2	0.66	88	4.5	4.5

Table 2 – LNG Pumping and FSRU Regasification Emission Analysis – 100 TPY PSD Boiler Threshold (all values reflect TPY)

	NOx	VOC	CO	SO_2 (assuming 2.7%S fuel)	PM_{10}	$PM_{2.5}$
LNG Carrier Offloading and FSRU Processing Emissions						
FSRU – Process Heaters (4 with 1 spare)	21	8.4	49	2.5	31	31
Current Fleet LNG Carrier while Pumping	11	0.2	0.6	84	4	4
Total Boiler Related Emissions	32	8.6	49.6	86.5	35	35

Table 3 – LNG Pumping and FSRU Regasification Emission Analysis – 100 TPY PSD Steam Electric Generation Threshold (all values reflect TPY)

	NOx	VOC	CO	SO_2 (assuming 2.7%S fuel)	PM_{10}	$PM_{2.5}$
LNG Carrier Offloading and FSRU Processing Emissions						
FSRU – Gas Turbines w/heat recovery (2 with 1 spare)	34	9.4	30	1.6	16.1	16.1
Current Fleet LNG Carrier while Pumping	na	na	na	Na	na	na
Total Emissions	34	9.4	30	1.6	16.1	16.1

ATTACHMENT A

Table 12
EMISSION FACTORS FOR LNG CARRIER

Pollutant	Sulfur Content of Fuel (wgt %)	Emission Factor (g/kW-hr) Steam Turbine Heavy Fuel Oil	Emission Factor (g/kW-hr) Slow Speed Diesel Heavy Fuel Oil	Emission Factor (lb/MMBtu) Gas Turbine LNG
NO_x	-	2.1	19.67	0.32
VOC	-	0.03	0.6	0.0021
CO	-	0.12	1.59	0.082
SO_2	1.5	9.2	6.53	0.00064
	2.67	16.3	11.63	0.00064
	4.5	27.5	na	not applicable
$PM_{2.5}$	-	0.75	1.64	0.0066
PM_{10}	-	0.75	1.64	0.0066
CO_2	-	956	682	110.0

Notes:

1. All emission factors for steam turbines, except for SO_2 with fuel sulfur content of 1.5% and 4.5% from Ref. 13, Table D.9.
2. SO_2 emission factor for 1.5% and 4.5% sulfur fuel based on fuel consumption of 305 g/kW-hr (Ref.11, Table
3. All emission factors for slow speed diesel from Ref.13. Table D.9
4. Heavy Fuel Oil is same as Residual Oil.
5. All emission factors for gas turbines from AP-42, Section 3.1 (uncontrolled emissions); assume sulfur content of natural gas of 6.8 ppm.

Table 13a

SUMMARY OF EMISSION RATES FOR LNG CARRIERS OF VARIOUS CARGO CAPACITY AND LOADING RATE WHILE AT THE FSRU

Daily Natural Gas Delivery	1	bcf/day	Estimated average daily natural gas delivery rate.
	21,095	Mg/day	Calculated from ideal gas law using standard temperature and pressure.
Annual LNG Delivery Rate by Mass	7,700,000	metric tons/yr	Maximum annual LNG delivery to FSRU
	7,700,051	Mg/yr	
LNG Density	470	kg/m^3	Design data from RR13
LNG Annual Delivery Rate by Volume	16,383,086	m^3/yr	Calculated from Annual LNG Delivery Rate by Mass and LNG Density

Pump Power requirements
2,816 ST vessel 138K m3
3,212 SSD reliq vessel, 260K m3

Vessel Type	Vessel Size (m^3)	LNG Loading Rate (m^3/hr)	Annual Vessel Dockings (#/yr)	Vessel Duration at FSRU: LNG Loading (hr)	Vessel Duration at FSRU: No Loading (hr)	Power Supplied by Engines[1]: LNG Pumps (kW)	Power Supplied by Engines[1]: Other Equip. (kW)	Fuel Use by Vessel at FSRU[2,3] (tons)	Maximum Hourly Emissions[4] (lb/hr): NO_x	VOC	CO	CO_2	SO_2	PM_{10} ($PM_{2.5}$)	Maximum Hourly Emissions with No Loading[5] (lb/hr): SO_2	PM_{10} ($PM_{2.5}$)	Average Hourly Emission Over 24-Hour Period[6] (lb/hr): SO_2	PM_{10} ($PM_{2.5}$)	Annual Emissions - LNG Loading (tpy) - Pumping and Ship Hoteling Subtotal: NO_x	VOC	CO	CO_2	SO_2	PM_{10} ($PM_{2.5}$)
Existing Vessel Population																								
Conventional LNGC Heavy Fuel Oil (2.7%S) Steam turbine propulsion	125,000	10,000	132	12.5	8	2,816	1,900	25	22	0.3	1.2	9,939	285	8	68	3.1	171	5	18.01	0.3	1.03	8,200	140	6
		13,000	132	9.6	8	3,661	1,900	23	26	0.4	1.5	11,720	337	9	68	3.1	158	5	16.34	0.2	0.93	7,438	127	6
		15,000	132	8.3	8	4,224	1,900	22	28	0.4	1.6	12,907	371	10	68	3.1	151	5	15.59	0.2	0.89	7,099	121	6
Conventional LNGC Heavy Fuel Oil (2.7%S) Steam turbine propulsion	140,000	10,000	118	14.0	8	2,816	1,900	27	22	0.3	1.2	9,939	285	8	68	3.1	189	6	18.03	0.3	1.03	8,210	140	6
		13,000	118	10.8	8	3,661	1,900	25	26	0.4	1.5	11,720	337	9	68	3.1	174	5	16.36	0.2	0.93	7,447	127	6
		15,000	118	9.3	8	4,224	1,900	24	28	0.4	1.6	12,907	371	10	68	3.1	167	5	15.61	0.2	0.89	7,107	121	6
Conventional LNGC Heavy Fuel Oil (2.7%S) Steam turbine propulsion	160,000	10,000	103	16.0	8	2,816	1,900	30	22	0.3	1.2	9,939	285	8	68	3.1	213	6	17.99	0.3	1.03	8,190	140	6
		13,000	103	12.3	8	3,661	1,900	28	26	0.4	1.5	11,720	337	9	68	3.1	195	6	16.32	0.2	0.93	7,429	127	6
		15,000	103	10.7	8	4,224	1,900	27	28	0.4	1.6	12,907	371	10	68	3.1	187	6	15.57	0.2	0.89	7,090	121	6
Vessel Design On-Order (Expected in-service 2008)																								
New Design LNGC Heavy Fuel Oil (1.5%S) Slow Speed Diesel	160,000	10,000	1	16.0	8	2,816	2,700	24	239	7.3	19.3	8,293	79	20	69	9.8	76	17	2	0.1	0.2	66	1	0
		13,000	1	12.3	8	3,661	2,700	21	276	8.4	22.3	9,564	92	23	69	9.8	70	15	2	0.1	0.1	59	1	0
		15,000	1	10.7	8	4,224	2,700	21	300	9.2	24.3	10,410	100	25	69	9.8	67	14	2	0.0	0.1	56	1	0
New Large LNGC Heavy Fuel Oil (1.5%S) Slow Speed Diesel	215,000	10,000	1	21.5	8	2,816	3,000	32	252	7.7	20.4	8,745	84	21	77	10.8	83	20	3	0.1	0.2	94	2	0
		13,000	1	16.5	8	3,661	3,000	29	289	8.8	23.3	10,015	96	24	77	10.8	90	20	2	0.1	0.2	83	1	0
		15,000	1	14.3	8	4,224	3,000	27	313	9.6	25.3	10,861	104	26	77	10.8	88	19	2	0.1	0.2	78	1	0
Concept Vessels In Serivce (beyond 2010)																								
New Very Large LNGC Heavy Fuel Oil (1.5%S) Slow Speed Diesel[7]	250,000	10,000	1	25.0	8	3,212	3,200	40	278	8.5	22.5	9,641	92	23	82	11.6	92	23	3	0.1	0.3	121	2	0
		13,000	1	19.2	8	4,176	3,200	36	320	9.8	25.9	11,089	106	27	82	11.6	101	24	3	0.1	0.2	107	2	0
		15,000	1	16.7	8	4,818	3,200	34	348	10.6	28.1	12,055	115	29	82	11.6	105	24	3	0.1	0.2	100	2	0
New Very Large LNGC LNG fuel only Gas Turbine Propulsion[8,9]	250,000	10,000	1	25.0	8	3,212	2,300	n/a	16	0.10	4.1	5,457	0.03	0.33	0.01	0.14	0.03	0.33	0	0.00	0	68	0.00	0.00
		13,000	1	19.2	8	4,176	2,300	n/a	19	0.12	4.8	6,411	0.04	0.38	0.01	0.14	0.03	0.34	0	0.00	0	62	0.00	0.00
		15,000	1	16.7	8	4,818	2,300	n/a	20	0.13	5.3	7,047	0.04	0.42	0.01	0.14	0.03	0.34	0	0.00	0	59	0.00	0.00

Notes:

1. Based on data supplied in Ref 4. LNG Pumps operate only during "LNG Loading". Other Equip. operates during "LNG Loading" and "No Loading"
2. Steam Turbine fuel use based on engine flow rate of 305 g/kW-hr (Ref. 11, Table 2.8). Steady operation while unloading is consistent with "at sea" operations.
3. Slow speed diesel fuel use based on fuel flow rate of 195 g/kW-hr (Ref. 11, Table 2.8). Steady operation while unloading is consistent with "at sea" operations.
4. Maximum hourly emission rate based on operation of vessel auxiliary engines needed to power LNG Pumps and Other Equipment.
5. Maximum hourly emission rate based on operation of vessel auxiliary engines needed to power only Other Equipment.
6. Weighted values based on emissions during Loading and No Loading periods.
7. New Very Large LNGC vessel assumed to use slow speed diesel on HFO only. Vessel will have a LNG reliquefaction plant on-board, no boil off gas available for propulsion.
8. New Very Large LNGC vessel assumed to use gas turbine capable of 22MW generation. No vessels of this type under design yet; specifications speculative only. No reliquefaction plant used.
9. Fuel rate of gas turbines estimated at 9,000 Btu/kW-hr.

Annual Emissions (tpy) - No Loading period - Ship Hoteling 8 hours						Annual Emissions - Total (tpy)						Annual Emissions - LNG Pumping Only (tpy)						Annual Emissions - Hoteling During LNG Pumping (tpy)					
NO_x	VOC	CO	CO_2	SO_2	PM_{10} ($PM_{2.5}$)	NO_x	VOC	CO	CO_2	SO_2	PM_{10} ($PM_{2.5}$)	NO_x	VOC	CO	CO_2	SO_2	PM_{10} ($PM_{2.5}$)	NO_x	VOC	CO	CO_2	SO_2	PM_{10} ($PM_{2.5}$)
5	0.1	0.27	2,114	36	1.7	23	0.3	1.3	10,314	176	8	10.76	0.2	0.615	4,896	83	4	7.26	0.1	0.415	3,304	56	3
5	0.1	0.27	2,114	36	1.7	21	0.3	1.2	9,552	163	7	10.76	0.2	0.615	4,896	83	4	5.58	0.1	0.319	2,541	43	2
5	0.1	0.27	2,114	36	1.7	20	0.3	1.2	9,213	157	7	10.76	0.2	0.615	4,896	83	4	4.84	0.1	0.276	2,202	38	2
4	0.1	0.24	1,890	32	1.5	22	0.3	1.3	10,100	172	8	10.77	0.2	0.615	4,902	84	4	7.27	0.1	0.415	3,308	56	3
4	0.1	0.24	1,890	32	1.5	21	0.3	1.2	9,337	159	7	10.77	0.2	0.615	4,902	84	4	5.59	0.1	0.319	2,544	43	2
4	0.1	0.24	1,890	32	1.5	20	0.3	1.1	8,997	153	7	10.77	0.2	0.615	4,902	84	4	4.84	0.1	0.277	2,205	38	2
4	0.1	0.21	1,650	28	1.3	22	0.3	1.2	9,840	168	8	10.74	0.2	0.614	4,890	83	4	7.25	0.1	0.414	3,300	56	3
4	0.1	0.21	1,650	28	1.3	20	0.3	1.1	9,078	155	7	10.74	0.2	0.614	4,890	83	4	5.58	0.1	0.319	2,538	43	2
4	0.1	0.21	1,650	28	1.3	19	0.3	1.1	8,740	149	7	10.74	0.2	0.614	4,890	83	4	4.83	0.1	0.276	2,200	37	2
0	0.0	0.0	16	0	0.0	2	0.1	0.2	83	1	0	0.98	0.0	0.1	34	0.32	0.08	1	0.0	0.1	32	0	0
0	0.0	0.0	16	0	0.0	2	0.1	0.2	75	1	0	0.98	0.0	0.1	34	0.32	0.08	1	0.0	0.1	25	0	0
0	0.0	0.0	16	0	0.0	2	0.1	0.2	72	1	0	0.98	0.0	0.1	34	0.32	0.08	1	0.0	0.1	22	0	0
1	0.0	0.0	18	0	0.0	3	0.1	0.3	112	2	0	1.31	0.0	0.1	46	0.44	0.11	1	0.0	0.1	48	0	0
1	0.0	0.0	18	0	0.0	3	0.1	0.2	101	2	0	1.31	0.0	0.1	46	0.44	0.11	1	0.0	0.1	37	0	0
1	0.0	0.0	18	0	0.0	3	0.1	0.2	96	2	0	1.31	0.0	0.1	46	0.44	0.11	1	0.0	0.1	32	0	0
1	0.0	0.0	19	0	0.0	4	0.1	0.3	140	2	0	2	0.1	0.1	60	1	0	2	0.1	0.1	60	1	0
1	0.0	0.0	19	0	0.0	4	0.1	0.3	126	2	0	2	0.1	0.1	60	1	0	1	0.0	0.1	46	0	0
1	0.0	0.0	19	0	0.0	3	0.1	0.3	120	2	0	2	0.1	0.1	60	1	0	1	0.0	0.1	40	0	0
0.0	0.00	0.0	9	0.000	0.001	0	0.00	0.1	77	0.00	0.00	2	0.1	0.1	60	1	0	1	0.0	0.1	43	0	0
0.0	0.00	0.0	9	0.000	0.001	0	0.00	0.1	71	0.00	0.00	2	0.1	0.1	60	1	0	1	0.0	0.1	33	0	0
0.0	0.00	0.0	9	0.000	0.001	0	0.00	0.1	68	0.00	0.00	2	0.1	0.1	60	1	0	1	0.0	0.1	29	0	0

BROADWATER

3. There is a discussion in Page 9-14 of the October 2005 Report (or Page 9-13) of the January 2006 Report) regarding the applicability *[sic]* of PSD applicability thresholds for this proposed facility. The Report states that this proposed facility has two PSD source categories within the FSRU: 1) fossil fuel-fired steam electric plans of more than 250 MMBTU/hr heat input and 2) fossil fuel boilers (or combinations thereof) totally more than 250 MMBTU/hour heat input. Broadwater states that individual and combined emissions from these two category sources would not exceed the PSD threshold of 100 tons/year. Furthermore, Broadwater states that the primary purpose of the FSRU is the storage and regasification of natural gas and since it does not fall within the 28 recognized source categories, the 250 tons/year PSD applicability threshold applies to the FSRU process.

This approach seems to be consistent with the July 6, 1992 letter from Edwin Erickson, Regional Administrator, EPA Region 3, to Mr. George Freeman, Counsel for Reserve Coal Properties Company. This EPA letter states in Page 4 that "EPA's policy is to use the primary activity test to determine which SIC code governs and thus, which activities may be grouped into a single 'source.' However, once the source is identified, EPA will determine the proper applicability thresholds on the basis of the categories set out in Section 169(l). If a source includes an industrial operation listed under Section 169(l), the 100-ton threshold will apply to the listed operation no matter what the primary activity of the entire source." However, because EPA Region 2 has not yet received any final Report/application containing the SIC codes and the proper reapportioning of the emission estimates from the FSRU and vessels (see Comments Nos. 1 and 2 above), a final PSD applicability determination cannot be made at this time.

RESPONSE

Broadwater Energy believes that the information provided in the Resource Reports and this response will enable EPA to make a final determination that PSD does not apply to the Project.

BROADWATER

4. Will all the vessels carrying the LNG to the FSRU have a boiler on board (or a combination of boilers) totaling more than 250 MMBtu/hour heat input? If not all vessels will have such boiler(s), give an estimate of the percent of vessels that will be at berth at the FSRU that will have boiler(s) totaling more than 250 MMBtu/hour heat input. Please specify how many boilers are on each ship and how many MMBtu/hour heat input each boiler is.

RESPONSE

As noted, the LNGCs that would deliver LNG to the Project will not dedicated to the Project and Broadwater Energy, the owner and operator of the FSRU, will have *no* ownership interest in, or control over, the LNGCs. The vessel fleet delivering LNG to the FSRU beginning in the first year of FSRU operation (2011) and beyond will likely be a mix of vessel types (steam and diesel) and may slowly change with each year beyond the first year of operation. Thus, it is likely that at the beginning of FSRU operation and as the fleet composition changes (as discussed below), some vessels carrying LNG to the FSRU will not have boilers on board totaling more than 250 MMBtu/hour, while some will. Vessels that will have boilers will be steam turbine powered vessels; each steam turbine powered vessel has two boilers aboard, each with an approximate heat input rating of 170 MMBtu/hour. However, as noted above in Broadwater Energy's response to EPA Question #2, only a partial load on one of the boilers will be needed to offload LNG cargo to the FSRU.

The current LNGC fleet (as of February 2006) consists of 196 vessels of which 194 are steam propulsion. Currently, 133 vessels are on-order (i.e., vessels to be built for which firm orders have been placed). Of these on-order vessels, 86 are steam propulsion and 47 are diesel propulsion. As these on-order vessels enter service, the composition of the worldwide LNGC fleet will change from the current 99% steam propulsion to approximately 85% steam and 15% diesel vessels based on the best estimate within the LNG shipping industry. The diesel vessels will not have boilers for propulsion/electric generation; the diesel engines will provide the mechanical drive to the electric generators. Thus, for each year from the first full year of FSRU operation (2011), an increasing percentage of vessels delivering LNG to the FSRU will likely be slow speed diesels. It is not possible with any certainty in 2006 to predict what the mix of vessel types docking to the FSRU in 2011 will be (e.g., steam or diesel propulsion), since this is entirely dependent on which LNG shippers acquire new vessels and whether those shippers are contracted to deliver LNG to the Broadwater FSRU.

BROADWATER

5. The Report must also include a discussion as to the feasibility of the gas turbines at the FSRU providing electricity to the vessels at berth so that the vessels can run the LNG pumps. This approach can potentially reduce SO_2 emissions from the vessels while at berth because the vessels will use higher sulfur fuel than the FSRU. If this is technically infeasible, detailed reasons should be provided.

RESPONSE

While the concept of cold ironing, that is, the provision of shore-based power to small craft while at berth, is not new, it is not considered to be a normal practice for commercial shipping except in dry dock where hotel services may be maintained with shore-based power. Use of shore-based power for commercial vessels during cargo operations is a recent innovation which may be feasible for certain types of vessels but is technically challenging for tankers or LNGCs during discharging operations where power requirements can be significant (as compared to existing shore-based power options). While the majority of vessels are capable of connecting to a shore-based power supply, there are technical limitations as to what services this supply could support. Broadwater Energy is not aware of any offshore LNG terminal (in service or proposed) that would provide power to vessels to facilitate the offloading of LNG cargo. Additionally, power transfer between two independently moving vessels, such as between Broadwater's FSRU and an LNGC, would necessarily be more complex than a traditional ship to shore power interface.

There are a number of safety, design, operational and commercial risk factors to be considered. A description of these factors is provided here to demonstrate the complexity of the issue.

LNGCs (such as those that may call at the Project) range in size from 125,000 m^3 to about 250,000m^3 and are powered as follows:

- Steam turbine propulsion with dual fuel (natural gas and residual oil) boilers. Cargo pumping electric power provided by steam turbine generators;
- Dual fuel (natural gas and diesel oil) diesel electric propulsion. Cargo pumping power provided by diesel generators; and
- Single fuel diesel propulsion with on-board BOG reliquefaction. Cargo pumping by diesel generators arranged for operating on residual or diesel fuel.

LNGCs have two critical ship/shore interfaces: cargo transfer and emergency shutdown (ESD) systems. These systems are virtually standardized across the industry. Electrical systems on board LNGCs vary according to the size and type of vessel, owner's preference and the shipyard where the vessel is constructed. Cold ironing of LNGCs would require significant redesign and retrofitting of the existing LNG fleet to standardize electrical interfaces.

The cargo pumping (LNG off-loading) power required for these carriers at Broadwater would range from 2.5 to 3.5 MW. Compared to propulsion needs, this power demand places a modest load on the LNGC generation system. However, it is a significant amount of electricity when considering the utility systems needed to transfer electricity from the FSRU to the LNGC. It would require large power transfer cables and cable management systems that can accommodate tide changes and independent vessel movement by the carrier and the FSRU. This is unlike shore-to-ship power transfer systems used or being considered for use in other shore-based port locations for other industries like container ships or passenger cruise ships. Those systems are designed for the transfer of power for hoteling requirements from a static location (shore) to a berthed ship. In addition, the amount of electricity transferred on a per ship basis for hoteling is significantly less than the amount needed to offload LNG cargo.

Cable management for a large electrical load, especially between two floating bodies, warrants serious consideration from a risk perspective. A critical component of all LNG transfer operations is the linked Emergency Shutdown System, which stops the cargo flow whenever an abnormal situation is experienced on the LNGC or FSRU. In the event of an abnormal situation, the loading arms can be automatically disconnected, allowing the LNGC to depart in a controlled manner. The inability to disconnect the electric cabling and revert back to normal onboard power generation on the LNGC would interfere with the ability of an LNGC to depart from an emergency situation in an expeditious manner.

In addition, each vessel type has variable power distribution arrangements and differing cargo pumping power requirements. A feature of all tanker operations is the avoidance of all ignition sources in areas where a flammable vapor could be present. Cable management from the FSRU to the LNGC would require the physical movement of large cables through potentially hazardous areas of the FSRU or carrier, rendering the activity unsafe. The FSRU would also likely require multiple cable management systems to accommodate various LNGCs which have varied voltages and power distribution arrangements.

To mitigate risk associated with safety issues like the ESD issue, additional tug boats could be required to stay on station during the cargo transfer operations to manage the carrier in the event of a loss of power either during an ESD or for other reasons while at the FSRU. This would increase overall emissions from the Project.

From an operational perspective, to minimize risk, the offloading carrier should be alongside the FSRU for the shortest time consistent with safe operations. Connection and disconnection times associated with provision of FSRU power to the carrier will increase this time.

From a design perspective, neither the FSRU nor the current and under construction LNG carriers have been designed to accommodate a power transfer load required for cold ironing. The FSRU would need to undergo an engineering analysis and redesign as well as an operational reassessment in order to accommodate power transfer. Commercially, LNGC owners may refuse to deliver LNG to the Project given the power transfer requirements and the attendant risk. As

noted, Broadwater Energy will not have an ownership interest in nor control over the LNGCs which will deliver LNG the Project.

To determine if cold ironing of LNG vessels is feasible in the future, the LNG industry, in concert with port operators and various other groups such as the United States Coast Guard must conduct a thorough evaluation of all associated risk factors and, if deemed feasible, adopt industry standard practices for vessels and ports associated with LNG transport. Should the LNG industry and maritime organizations choose to evaluate the concept of cold ironing of active duty vessels, Broadwater will actively participate in these discussions.

BROADWATER

6. The Report must include a discussion on the feasibility of the FSRU providing fuel oil containing 1% Sulfur content or less to the vessels carrying the LNG while at berth for the purposes of off-loading and on-board processing of the LNG. Also, it should address the feasibility of the ships burning lower sulfur fuel on their own while at berth.

RESPONSE

Marine bunker fuel specifications are defined in the International Organization for Standardization (ISO) 8217 2005. This standard specifies the requirements for petroleum fuels for use in marine diesel engines and boilers. It specifies ten categories of residual fuel and four categories of distillate fuel, one of which is 1% sulfur diesel for emergency use in diesel engines.

In addition the "International Maritime Organization's (IMO's), Safety of Life at Sea (SOLAS) Convention, Chapter II-2 Construction Regulation 15 Arrangements for Oil Fuel, Lubricating Oil and Other Flammable Oils" defines the prescriptive limitations that apply to the use of oil as a fuel source, onboard a ship.

As defined in ISO 8217, bunker grade DMX has a maximum 1% sulfur content and has a minimum flashpoint of 43 degrees Celsius (109 °F). A general rule, the SOLAS Convention recommends that no oil fuel with a flashpoint of less than 60°C (140°F) shall be used as a primary fuel source. SOLAS further describes that the temperature of the space in which the oil fuel is stored or used shall not be allowed to rise within 10°C below the flashpoint of the fuel. SOLAS permits general use of oil fuel having a flashpoint of less than 60°C (140°F) but not less than 43°C (109 °F). For ships on worldwide trade routes, achieving the required separation of temperature between the storage space and 1% sulfur fuel oil would be a difficult criterion to meet.

In principle, DMX grade fuel oil may only be used for emergency equipment. As a result, fuel oil of this specification generally is available in drums and not in bulk and, therefore, could not be used by LNGCs as fuel for propulsion or cargo unloading.

Low sulfur diesel fuel will be stored on the FSRU for the operation of its diesel generators and start-up operations for gas turbine power generators and process heaters. The FSRU has not, however, been designed for bunkering fuel oil for transfer to LNGCs and hence there is no storage capacity for heavy fuel oil on the FSRU. The normal ship to shore or ship to ship fuel oil interface is arranged for "bunker in" or "bunker out" transfer of fuel oil. In general, these systems do not directly connect to the fuel burning systems and its equipment.

Fuel transferred to the LNGC would be segregated from the LNGC's own fuel. This may not be possible based on the standard arrangements for the LNGCs' fuel tanks. The provision of 1% sulfur fuel oil from the FSRU may also not be acceptable for some LNGCs because of their specific boiler arrangement, as this fuel can only be supplied to a limited number of fuel oil burners during the establishment and re-establishment of main power.

The transfer of fuel from the FSRU to the offloading LNGC creates an additional ESD interface. From a risk management perspective, this is unacceptable in terms of emergency disconnect time and the increased risk of oil spills during fuel transfer. The overall length of time for the offloading LNG carrier at the FSRU would also be increased as fuel transfer operations would need to be completed as a separate operation before the unloading of LNG could commence, potentially offsetting any emissions reduction that might be realized from using low sulfur fuel during offloading.

Finally, bunkering significant quantities of fuel oil on the FSRU would create the need for frequent trips by a refueling vessel to replenish supply. This would create the potential for fuel oil spills during transit, transfer to the FSRU, and transfer from the FSRU to the LNGCs.

CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing document upon each person designated on the service list compiled by the Secretary in this proceeding in accordance with the requirements of Rule 2010 of the Commission's Rules of Practice and Procedure.

Dated at Washington, D.C. this 11th day of August 2006.

/s/ Brett A. Snyder
Brett A. Snyder

Submission Contents